# 2000 Looking Ahead


*The national parks … are the baselines of our relatively undisturbed environment, and they need to be thoroughly understood, not only for their beauty and their wilderness and deep history, but also to realize their unique and vital contribution to science and education, particularly of the future.*

—E. O. Wilson
Harvard biology professor, naturalist, and author

Long anticipated, New Year's Day 2000 ushered in a new century that will surely test the National Park Service in many substantial ways. The fledgling century has already witnessed the first primate extinction in two centuries, Miss Waldron's red colobus monkey in western Africa. This is a compelling reminder of the alarming influence of human population growth and land use practices on natural systems. These trends also pose troubling challenges for the preservation of national parks in the United States. To sustain parks unimpaired for present and future generations the National Park Service must be as active as possible to understand the intricate functions of ecosystems and to educate the public about the requirements for park survival. As the following articles demonstrate, the new millennium affords the National Park Service the opportunity to consider expert viewpoints, gather information, and refine its strategy to perpetuate park ecosystems.

# Discovery 2000 participants paint a vision of future park management

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Approximately 1,200 caretakers of America's heritage—employees, partners, and supporters of the National Park Service—gathered in the shadow of the Gateway Arch in St. Louis in mid-September to develop a context for the care of the national park system in the 21st century. *Discovery 2000*, the National Park Service general conference, convened as a beginning rather than an event, as a time to think anew and develop a vision of the future, and as an opportunity to create possibilities. In the spirit of inclusion, a strong theme for the week, conference chair Jerry Rogers brought the session to order by addressing the participants as "ladies and gentlemen of the world of parks and park-like places." He asked everyone not to focus on plans or actions but instead to conceive the future, to envision what each individual and the National Park Service as an organization could become. Director Robert Stanton further defined this opportunity by encouraging participants to "speak freely" and "listen openly" in the quest "to dream, anticipate, and begin to formulate the role the National Park Service will play in the future of this nation."

The conference was organized around four themes—cultural resource stewardship, natural resource stewardship, education, and leadership—with a day devoted to each. Of particular distinction were the many world-class speakers who addressed the group in plenary sessions throughout the week and challenged the National Park Service to greatness. According to John Hope Franklin, historian, author, and chair of the National Park System Advisory Board, the National Park Service must become more relevant and inclusive if it intends to fully engage all Americans. It needs "to be more truthful" and "include stories about everybody," he said. The "teachers" of the National Park Service, he explained, "must be as diverse as the materials they use." Furthermore the Park Service must deliver its message outside the parks to help "translate places of geography and history into places of this society's sense of self and purpose."

*"The conference brought out many ideals that constitute a vision of where the National Park Service is headed."*

Poet Maya Angelou delivered a dramatic and emotionally packed address that took the audience apart, exposing their very souls, and built them back up again—as humans. She encouraged everyone to embrace the full power and responsibility of being human; to be open to people of any background, appearance, or belief; and to help tell the stories of parks by using poetry. Finally, she challenged the group to be courageous as individuals. "You can be anything for a while, but to be that thing consistently, you need courage."

Peter Senge drew out participants' ideas on the often-misunderstood subject of leadership. Leadership is not a function of a person's position, the group resolved; it is a role and it is transitory. Dr. Senge defined it as "the capacity of a human community to shape its future." He envisions NPS leadership as a key to creating a world in which people are more in tune with the primacy of nature, no longer succumbing to the centuries-old conditioning of continually speeding up like machines to become more and more productive. "My vision … is that you become … dedicated to helping people reconnect with what is primary," he said. The NPS mission is "about giving people tangible experiences of reference."

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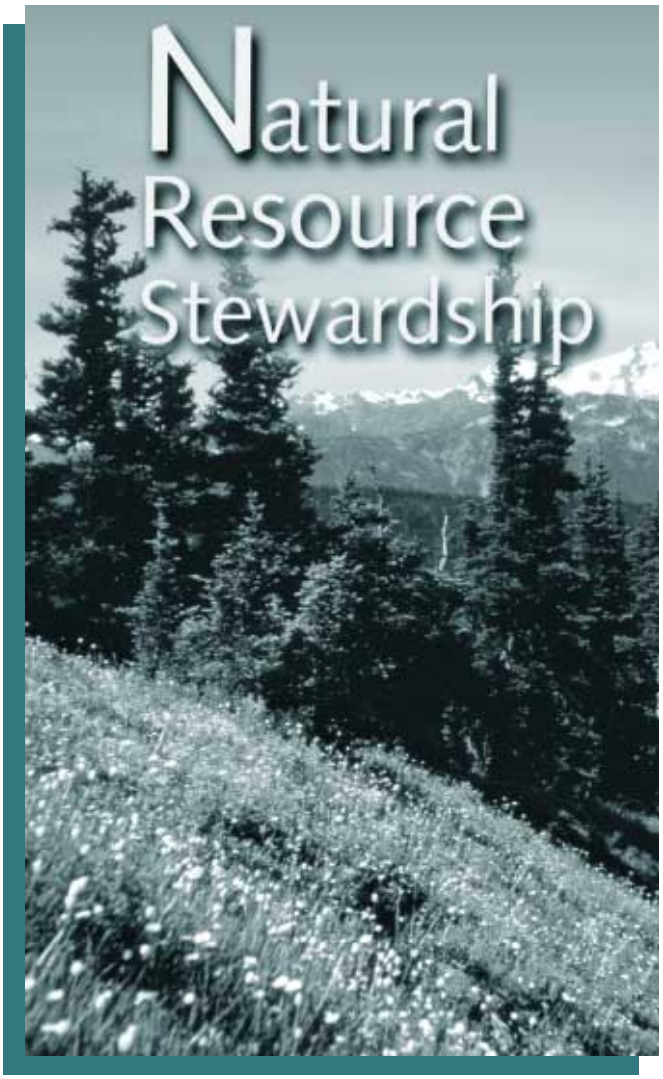


▲ **Discovery 2000 banner** representing the day of the conference devoted to natural resource preservation.

The conference featured addresses by biologists E. O. Wilson and Peter Raven, whose remarks are detailed in the following feature article. Both analyzed the century at hand and how the National Park Service can improve its natural resource protection. Among their many observations was that the All Taxa Biodiversity Inventory, presently being conducted at Great Smoky Mountains National Park, is a potent model for public-private collaboration and the ambitious scope of documenting all living things in a park. It will be emulated widely, they said.

The conference included breakout sessions in addition to the plenary addresses. Summarized on-line at www.nps.gov/discovery2000/sessions.htm, these sessions were designed to stimulate interdivisional and interorganizational dialogue among participants. They explored a broad array of topics of concern, including increasing the capacity for knowledge-based decision making in the National Park Service, expanding partnerships with park neighbors and nongovernmental organizations, dealing with invasive species, and effecting long-term ecological goals through fire. Others focused on visitor use management, long-term impacts of subsistence use of park natural resources, sustainable design of park facilities, and appropriate uses of national parks. Participants explored the concept of impairment of park natural resources and ways to improve management of migratory species through enhanced international cooperation. The session on NPS "brand" identity revealed useful principles that may be applicable to marketing natural resource management strategies more effectively. The discussion of changes in demographic trends affecting future park management (see page 55) was regarded as especially relevant and interesting.

Overall, the conference brought out many ideals that constitute a vision of where the National Park Service is headed. For example, the National Park Service and the national park system will become more relevant. The Service will become more diverse and the scope of stories told in parks will broaden and reflect society at large. Communications will strike at the heart. Science and environmental education will be delivered widely outside parks, inviting public participation in innovative and meaningful ways, and shaping the way society identifies with and values its national parks. The distinction between cultural and natural resource preservation in the National Park Service will diminish and be replaced by a unified approach to resource preservation. Already critical to park management, partnerships will help the National Park Service advance in the key growth areas of education and research. Buttressed by broad, collaborative inventories and scientific investigation, national parks will play an increasing role in biodiversity preservation, in understanding ecological function, and in perfecting ecological restoration. The National Park Service will become a leader in helping other countries deal with their environmental problems. The management skills being developed in small parks and heritage areas today, such as working effectively with park neighbors to minimize negative external impacts on park resources, will be emphasized in managing the generally large, exclusive-federal-jurisdiction parks. As more and more of the natural world is developed and ecological processes are compromised, the value of national parks for recreation, self-renewal, understanding, and scientific discovery will increase. The National Park Service will help people recognize the need to take care of the natural world and to connect with it in ways that will advance global environmental sustainability.

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Discovery 2000 was intended as a beginning, and in that spirit many participants followed up by meeting with coworkers in their respective parks to digest the ideas and discuss actions for the future. Feedback from several resource managers and park superintendents generally suggests that many of the big ideas from the conference resonated with participants. Several described their understanding of the need to view parks in a global context and to see the National Park Service as a world environmental leader. The Park Service is already widely admired and trusted. It can be of greater value to society if it adopts this broader global perspective and accentuates the connections between the parks and their larger ecosystems. Twenty thousand potential leaders already work for the Park Service, and by tapping the human spirit (theirs and that of the public), progress toward an integrated and coordinated national park system is possible. But inspiration alone is not the answer, some noted. The Park Service is progressing only as time, money, technology, staff, research, and other factors allow.

As a result of the conference, several managers now plan to approach their resource management programs with new resolve and emphasize new ways to engage and educate the public. John Tucker of Fort Sumter National Monument will incorporate more natural science in his park's resource management program. He explained that recognizing the need for natural science understanding in cultural parks is not as apparent as it is in predominantly natural resource parks. Bob Hickman of Prince

William Forest Park described how his staff will strive to involve people outside of the park in sustaining the larger ecosystems that sustain all parks. Gary Somers of Shenandoah National Park is working to blend natural and cultural resource management into one pursuit to achieve overall resource preservation. Finally, Becky Mills of Great Basin National Park contemplated inviting her colleagues to write letters to their parents, friends, and children explaining what their work as caretakers of America's treasures means to them. Such heartfelt letters could be published in a book to share widely.

Did the conference fundamentally change attitudes about the use of science in park management? Several respondents indicated that Discovery 2000 was not an awakening for them in this regard. They were already of the opinion that effective and responsible park management requires scientific information. However, several mentioned that the conference reinforced this concept and refined their understanding of accepted preservation philosophies. Chris Shaver, Chief of the Air Resources Division, noted that the Park Service has only just scratched the surface of the scientific information potentially available about park resources. The challenge will be to use this information well.

In all, Discovery 2000 stimulated and refreshed most of its participants. It gave them a chance to connect with new ideas and guiding principles, to grow personally and professionally, and to envision what the National Park Service can become. It required a leap of faith beyond the familiar problems and demanding pressures of the workaday world of national park management to a broader perspective of the world and the National Park Service's place in it. Not everyone succeeded in making the shift, but most sensed a very meaningful confluence of big ideas, even the possibility for hope in the environmentally challenging times that are upon us.

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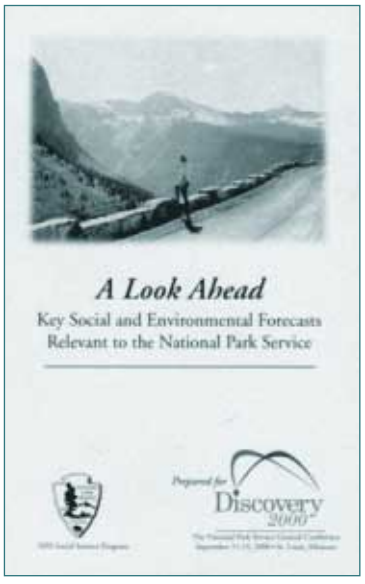
## *A Look Ahead* published




The NPS Social Science Program published a brief report on future trends for the *Discovery 2000* conference. *A Look Ahead: Key Social and Environmental Forecasts Relevant to the National Park Service* is intended to assist park managers in understanding how key trends may affect park management over the next 20 years. It includes information on current conditions and provides forecasts on a number of key social and environmental indicators relevant to the National Park Service. The indicators are grouped into five categories: demography, technology, economics, environment, and culture. In each category, a description of the trend data for current and predicted conditions, sources of information, and potential impacts on park management are provided. Most of these trends will affect park resources and their management. Among the predictions in the report are the following:

- The population in the Pacific West Region is projected to have the greatest growth of the seven NPS regions, increasing 15.2 percent by 2010; the Northeast Region is expected to experience the least growth, 3.4 percent.
- An estimated 102 million international tourists are expected to visit the United States in 2020, a 98.1 percent increase over 2000.
- By 2030, workers are expected to take an average of 30 days of annual leave, a 194.1 percent increase over 2000 (average 10.2 days).
- Between 2000 and 2010, acreage in wilderness and other extensive roadless areas is projected to decrease 6 percent, and undeveloped areas near roads will decrease by 8 percent.

*A Look Ahead* is posted on the Internet at www.nps.gov/socialscience/waso/products.htm.

# E. O. Wilson and Peter Raven highlight biodiversity preservation, education, and international assistance as growing NPS roles

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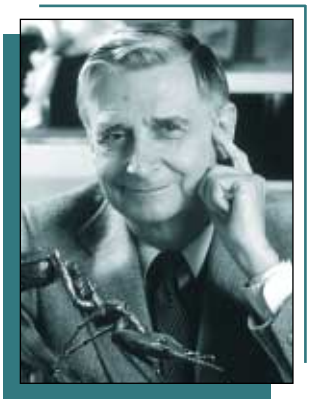
Day 2 of Discovery 2000 dawned with the promise of bringing to life new ideas about the preservation of wild landscapes and natural systems in the national park system in the 21st century. The National Park Service had invited eminent scientists E. O. Wilson (Harvard entomologist and author) and Peter Raven (Washington University botanist and president-elect, American Association for the Advancement of Science) to address the 1,200 conference participants "for their understanding of the world today, for the power of their vision for a better world tomorrow, and for their value … as pilots for uncharted waters." Each speaker presented a sobering view of a future fraught with major natural resource preservation challenges linked to human population growth and development. To deal with this reality, they shared insights into a growing national and international role for the National Park Service in environmental conservation.

Introduced as a great scientist, great citizen, and revered teacher, Dr. Wilson was first to speak and addressed the staff of the National Park Service as "stewards of … America's deep history." He acknowledged the irreplaceable nature of national parks, their popularity, and their expansive role in satisfying "an innate craving for … wildness." He reasoned that the national parks "are destined to play an ever-larger role" in society and around the world because of human population growth and the "conversion of the surviving remnants of the natural environment" to serve human purposes. "The bottom line that matters," he said, is "the ecological footprint," the land and shallow sea used by people "for food, housing, water, energy, transportation, commerce, and waste management." If current trends continue, he said, "the planet could easily lose a quarter of its plant and animal species within the next 30 years and half by the end of the century." The goal, he explained, is to survive this period "and come out the other end, as the [human] population begins to subside, with as much dignity and as high a quality of life and with [as] much of the rest of life accompanying us as possible."

Switching to slides, Dr. Wilson launched into a primer on biological diversity that articulated a leadership role for the National Park Service in fostering a better understanding of the biosphere. He recommended an expansion of biological inventories to include smaller organisms—insects, fungi, and microbes. Any of these species, he cautioned, could be a keystone species that, upon disappearing, could cause a reduction in other park species even before they had been discovered or studied. He said, "Ecologists … need the opportunity to monitor natural systems that are protected over many years.… We are just at the dawn of this particular era of long-term studies for which the national parks are ideally suited." He also explained the consequences of habitat loss with disturbing simplicity. "When you reduce the area of a natural environment … by 90 percent … the number of species that can be maintained … [drops] by half." The implications for national parks are frightening because parks are becoming increasingly isolated by conversion of land all around them.

In closing, Dr. Wilson stated, "I speak for a growing number of scientists who look to the National Park Service as a major force in fundamental research on biodiversity, ecology, and conservation in much the same way that medical scientists look to the National Institutes of Health and space scientists to NASA." Scientists will gladly form partnerships, he stressed, and will welcome access to the parks and collaboration with park staff. "They will help … further the primary aims of the Service with support and solid information of the kind needed to solve the complex and accelerating problems you face in this century." Ultimately, Dr. Wilson views the National Park Service as promoting science education and filling an international conservation role. He said, "You are, whether you planned it … or not, natural leaders on a broadening front whose actions will have growing influence in the United States and elsewhere, especially in the developing countries and far beyond the traditional venue of the national parks."



▲ E. O. Wilson

*"Dr. Wilson views the National Park Service as promoting science education and filling an international conservation role."*

Peter Raven framed his remarks in the context of environmental history. "While we were … slashing and cutting our way through a wilderness continent, the wilderness was working on us," he said. The foresight and unselfishness of setting aside portions of America for all to enjoy has "profoundly … molded … our national character." Yet, despite the most recent technological advances in biology and information, he explained, "we are just beginning … to take the first faltering steps in learning … how … we might … live at peace with the earth that nurtures all of us."

The lesson in this history, according to Dr. Raven, is that current land use practices, population growth, and increasing consumption cannot be sustained. In the last 50 years humankind has brought about losses in agricultural land and topsoil, reduced forests, developed chlorofluorocarbons (CFCs) and harmed the ozone layer, fragmented habitat and accelerated extinctions hundreds of times over prehistoric levels, and increased carbon dioxide in the atmosphere, contributing to global warming. These circumstances are problems for parks, but they

also have a high human cost. He repeated a stunning observation made earlier by his friend and colleague, E. O. Wilson, that for humankind to obtain the standard of living enjoyed by U.S. citizens today would require four additional planet Earths. Although it has just 4.5 percent of the world's population, the United States currently uses 25 percent of its resources. This inequity, Dr. Raven argued, is discriminatory and wrong, and cannot be sustained. He argued that we need the creative energies, different philosophies, and vision of all people, even those in the poorest countries who are too busy collecting water and firewood for their families to contribute to the larger society, to help solve the world's environmental problems. "Sustainable development is not a goal," he said. "Rather, it is more like freedom or justice, a direction in which … we search for a life good enough to warrant our comforts."

*"Dr. Raven encouraged the National Park Service to manage the parks 'for the maintenance of the greatest amount of biodiversity possible.'"*

Obviously, many environmental pressures affect the national parks, and the preservation of parks requires bright minds and good ideas from all quarters. To protect the parks, Dr. Raven urged the National Park Service to make the parks as accessible and meaningful as possible to every American. "The parks have an indispensable role to play in helping to preserve biodiversity," he said, and he encouraged the National Park Service to manage the parks "for the maintenance of the greatest amount of biodiversity possible." The concerns of landowners must be taken into consideration in order to progress in preserving biodiversity, and he encouraged better intergovernmental and private-sector collaboration. He also called for adequate funding of the National Park Service so that it is able to do its job, emphasizing that an appropriate and adequate scientific staff needs to be selected for every park. He stressed the need for alien invasive species to be studied, understood, and managed, and explained that national parks are excellent places to develop and test ecological models and apply knowledge. Finally, global climate studies should be increased, he reasoned, because of the considerable potential influence of climate-related change on the national parks.

In his conclusion, Dr. Raven stated that "the greatest value of the national parks in producing a healthy and a sustainable future for Americans is … in the educational arena." Advancing as educators will require partnerships, but the National Park Service should not underestimate its own strength as an educational institution. Finally, Dr. Raven recognizes the desirability of increasing the role of the National Park Service in helping other countries confront their environmental problems. Developing nations, he argues, are not going to rise to the U.S. standard of living. Providing international assistance of this kind is one way in which the United States could contribute significantly to a more sustainable world.

Following the lectures, Mike Soukup, NPS Associate Director for Natural Resource Stewardship and Science, led a riveting question-and-answer session with both speakers that drew on questions submitted by the audience. Asked whether the Park Service should direct its restoration energies toward the species or community level, Dr. Raven replied that the two are closely related and that restoration requires a broad view of the landscape. "We don't have the mechanisms in the United States to deal with ecosystems as ecosystems," he said. Regional approaches to ecosystems and species preservation can be effective, he reasoned, but these have proven "very difficult across the … government." Although both he and Dr. Wilson praised the Endangered Species Act for providing some protection for species and for its educational value in raising public awareness, they see effective collaboration among government and private landowners as key. Dr. Wilson urged that remedies be developed to address aggrieved landowners who perceive species protection as a seizure of their land. Additionally, much more information on population dynamics is needed.

When asked about prioritizing research and resource management activities in and around national parks, Dr. Wilson indicated that even fundamental research in parks is limited at present. He recommended that the National Park Service argue the "increasing returns to scale" of a more robust NPS budget that could address the priorities enumerated earlier by Dr. Raven. To hearty applause, he said, "We need … some amount of parity … of preoccupation with personal health, … personal comfort, and planetary health."

▲ Peter Raven

The two biologists bantered back and forth about the importance of exporting U.S. know-how in environmental problem solving. "Over 150 countries," Dr. Raven said, have "basically no scientific or technical infrastructure." He suggested that much more could be done in international training and foreign work assignments to benefit those countries and the world while also enhancing the careers of those who participate in this manner. Dr. Wilson summed it up this way: "If we recognize the … environment … as crucial for the future of the whole world … then we will want to see scientists of the first rank staying in the developing countries." Biodiversity is concentrated in these countries,

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which makes them perfectly suited as world leaders in its preservation. He said, "We should be encouraging that leadership with programs of education and with support from private [and] … public sources."

The topic of educating the public on the importance of preserving biological diversity was raised, and Dr. Raven responded by saying that both education and science-based management depend on "knowing what's out there." He encouraged the National Park Service to look for ways to involve the public in the scientific process of determining status and trends, collecting data, counting birds, and so on. The resulting information would supply education in a very natural way. Even though intellectual arguments are easily made for preserving biodiversity, he said, the "aesthetic, … moral, … and … ethical aspects" will be most meaningful to people. He suggested that the National Park Service communicate the wonder of biological diversity in refreshing and even spiritual ways.

The presentations were extraordinary for their depth and for the applicability of their ideas. The speakers stirred emotions in the audience that ranged from inspiration to desperation. More importantly, the insights shared by E. O. Wilson and Peter Raven gave the National Park Service a new footing and a fortified resolve to meet the challenges of the new century, aptly referred to at Discovery 2000 as the "century of the environment."

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## Advisory Board continues to boost scientific management of national parks

The National Park System Advisory Board has completed its approximately 18-month investigation of several wide-ranging questions about the future of the national parks and the National Park Service. A report of their findings and recommendations will be published in 2001 by the National Geographic Society. It is expected to be visionary and to describe the future legacy of the national parks and the role of the National Park Service in conserving resources. The board also voted unanimously in November to establish a permanent science committee to guide and advise the National Park Service on its programs and overall management of park resources. Dr. Sylvia Earle, marine biologist and 1998–2000 explorer in residence with the National Geographic Society, made the motion and sees the commitee constituting a blue-ribbon panel of preeminent scientists. The mission of the committee was being drawn up and its members were being selected at year's end.

▲ The National Park System Advisory Board

## Natural Resource Challenge funding increases in FY 2001

A total of $15.2 million was appropriated in late 2000 (FY 2001) under the Natural Resource Challenge for a variety of natural resource programs and emphases: $4.2 million for monitoring park vital signs of ecosystem health; $3.4 million for threatened and endangered species recovery and invasive species control in parks; $1.7 million for vegetation mapping; $1.6 million for establishing four cooperative ecological studies units; $1.3 million for monitoring water quality and assessing watershed conditions; $1.1 million for making natural resource data usable for management decisions and the public; $900,000 for establishing five learning centers; $823,000 for expanding water resource protection and restoration efforts; and $200,000 for inventorying air emissions in parks. During 2000, program managers were planning the use of the funds, which will be spent mostly in 2001. Among the highlights are the following:

- The appropriation more than doubles the funding for vegetation mapping in national park units. With this funding the Vegetation Mapping Programs of the NPS and the USGS Biological Resources Division should be able to complete their work for parks in less than half the time, initiate new mapping in other units, and increase and improve long-term planning for the program.
- Money for monitoring park vital signs is being allocated to about 55 parks to establish monitoring networks.
- The water quality–monitoring dollars are funding 12 park vital signs monitoring networks to establish a nationwide water-quality data management and analysis program.
- Funding for invasive species control and threatened and endangered species recovery is a budget base increase that is being used by 17 parks to pay for staff to address these emphases.
- The air quality funds are being used to establish emission inventory programs in 20 parks.

## Social Science Implications

# National Park Service conducts a comprehensive study of the American public

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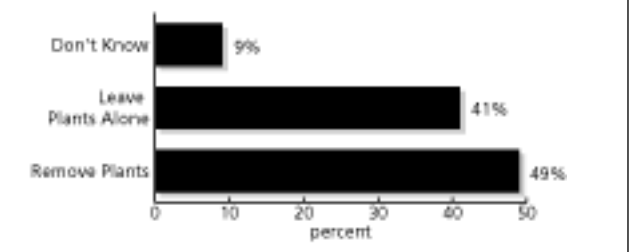
Did you know that one-third of adults in the United States have visited a national park system unit within the past two years? Did you know that the main reason more people have not visited parks recently is that they are simply too busy? And did you know that people are divided over whether they prefer that nonnative animals and nonnative plants be removed from national parks or left alone?

This information comes out of a recent study of the American public sponsored by the National Park Service. The Park Service commissioned the Social Research Laboratory at Northern Arizona University to conduct its first comprehensive survey of a random cross-section of the American public, including park system visitors and nonvisitors. The main purpose of the survey was to gather public perceptions of the National Park Service and its performance in units of the national park system.

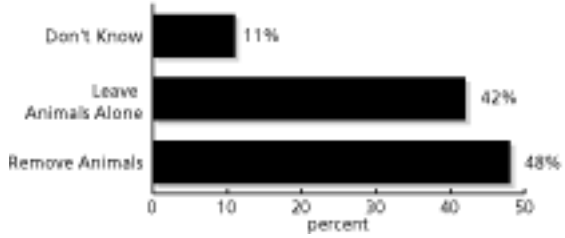
Survey data were obtained by interviewing randomly selected adult members of 3,515 households in the United States. Data collection was completed between February and May 2000, after which two data sets were developed. A national data set reflects attitudes, opinions, and behaviors of the adult population of the United States and a regional data set allows for comparisons of information across people living in the seven NPS regions.

The survey data profile trends in visitation and nonvisitation of national park system units in the United States. For purposes of this research, a national park system visitor is defined as an individual who entered a park system unit within the previous 24 months of being contacted for this survey and who is able to properly identify the unit entered. The data also define demographic differences between visitors and nonvisitors, as well as differences in their motivation, interest, and attitudes. Details of the trips visitors make to units of the national park system and what visitors do once inside are included in the data. Research data also provide a perspective of the barriers to more frequent visitation of park system units, future usage patterns, images of the National Park Service and national park system, and public attitudes about specific resource management issues. The survey margin of error is ± 1.7 percent for the national-level data and ± 4.5 percent for the regional-level data.

Overall, the national park system is very well regarded by visitors. Previous visitors gave an average rating of 8.09 on a scale of 1 to 10, with 10 being the highest rating. People living closer to the East Coast tended to give slightly higher ratings to the national park system than people living in the West (8.41 for those living in the National Capital Region compared to 7.47 for those living in the Alaska Region). Visitors who have used national park reservation systems overwhelmingly had a positive experience. Among those familiar with NPS efforts to include the public in policy decisions, there is a widespread belief that the Park Service does a good or excellent job of responding to public input.




**The proportion of the general public** that felt nonnative plants should be left alone or removed from national park units. (Numbers do not add up to 100 percent because of rounding or reporting of selected results.)




**The proportion of the general public** that felt nonnative animals should be left alone or removed from national park units.

Social science research plays an important role in NPS policy decisions. Policies that incorporate an understanding of public needs and desires better enable the National Park Service to serve the public interest. The National Park Service took a bold step in 2000 by scientifically collecting information about public values, attitudes, and images of the National Park Service and national park system units. Survey data will contribute to a wide range of policy decisions for years to come.

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